

said feed stream comprises a feed liquid hydrocarbon and a feed sulfur species, and further wherein said selective solid membrane is constructed from one or more compounds providing greater permeation selectivity for said feed sulfur species than said feed liquid hydrocarbon;

conveying a sweep stream past a second side of said selective solid membrane;
and

transporting said feed sulfur species from said feed stream through said selective solid membrane in a permeate into said sweep stream, thereby converting said sweep stream to a sulfur-enriched stream and said feed stream to a substantially sulfur-free reject stream containing a primary hydrocarbon product.

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4. (once amended) The process of claim 1 wherein said feed sulfur species is [substantially] more membrane permeable than said feed liquid hydrocarbon.

5. (once amended) The process of claim 1 wherein said sweep stream is [substantially] smaller than said feed stream on a weight basis.

7. (once amended) The process of claim 1 wherein said feed liquid hydrocarbon is a [conventional] refinery hydrocarbon stream.

11. (once amended) The process of claim 1 wherein said one or more compounds from which said selective solid membrane is constructed is [formed from a compound] selected from the group consisting of nitrogen compounds, nitrogen oxide compounds, oxygen compounds, sulfur compounds, sulfur oxide compounds, and mixtures thereof.

12. (once amended) The process of claim 1 wherein said selective solid membrane is more selective for said feed sulfur species than said feed liquid hydrocarbon.

13. (once amended) The process of claim 1 wherein said selective solid membrane contains a facilitated transport liquid.

18. (once amended) The process of claim 17 further comprising recycling said

sweep stream separated from said feed sulfur species to said second side of said selective solid membrane.

19. (once amended) A process for removing sulfur from a hydrocarbon comprising:
conveying a feed stream past a first side of a selective solid membrane, wherein said feed stream comprises a feed liquid hydrocarbon and a feed sulfur species, said selective solid membrane is constructed from one or more compounds providing greater permeation selectivity for said feed sulfur species than said feed liquid hydrocarbon, and [wherein] said selective solid membrane contains a facilitated transport liquid;

transporting said feed sulfur species from said first side into said selective solid membrane in a permeate;

complexing said feed sulfur species with said facilitated transport liquid to form a facilitated transport complex; and

transporting said facilitated transport complex through said selective solid membrane to a second side of said selective solid membrane, thereby converting said feed stream to a substantially sulfur-free reject stream.

23. (once amended) A process for removing sulfur from a hydrocarbon comprising:
conveying a feed stream past a first side of a selective solid membrane, wherein said feed stream comprises a feed liquid hydrocarbon and a feed sulfur species, and further wherein said selective solid membrane is constructed from one or more compounds providing greater permeation selectivity for said feed sulfur species than said feed liquid hydrocarbon;

conveying a sweep stream past a second side of said selective solid membrane, wherein said sweep stream comprises a membrane impermeable second liquid hydrocarbon;

transporting said feed sulfur species from said feed stream through said selective solid membrane in a permeate to said sweep stream, thereby converting said sweep stream to a sulfur-enriched stream and said feed stream to a substantially sulfur-free reject stream containing a primary hydrocarbon product; and

separating said permeate from said sweep stream in said sulfur-enriched stream.